

2008 Honda Civic GX
2006-08 ENGINE Starting System (K20Z3) - Civic (All Except Si)

2006-08 ENGINE

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COMPONENT LOCATION INDEX

2008 Honda Civic GX

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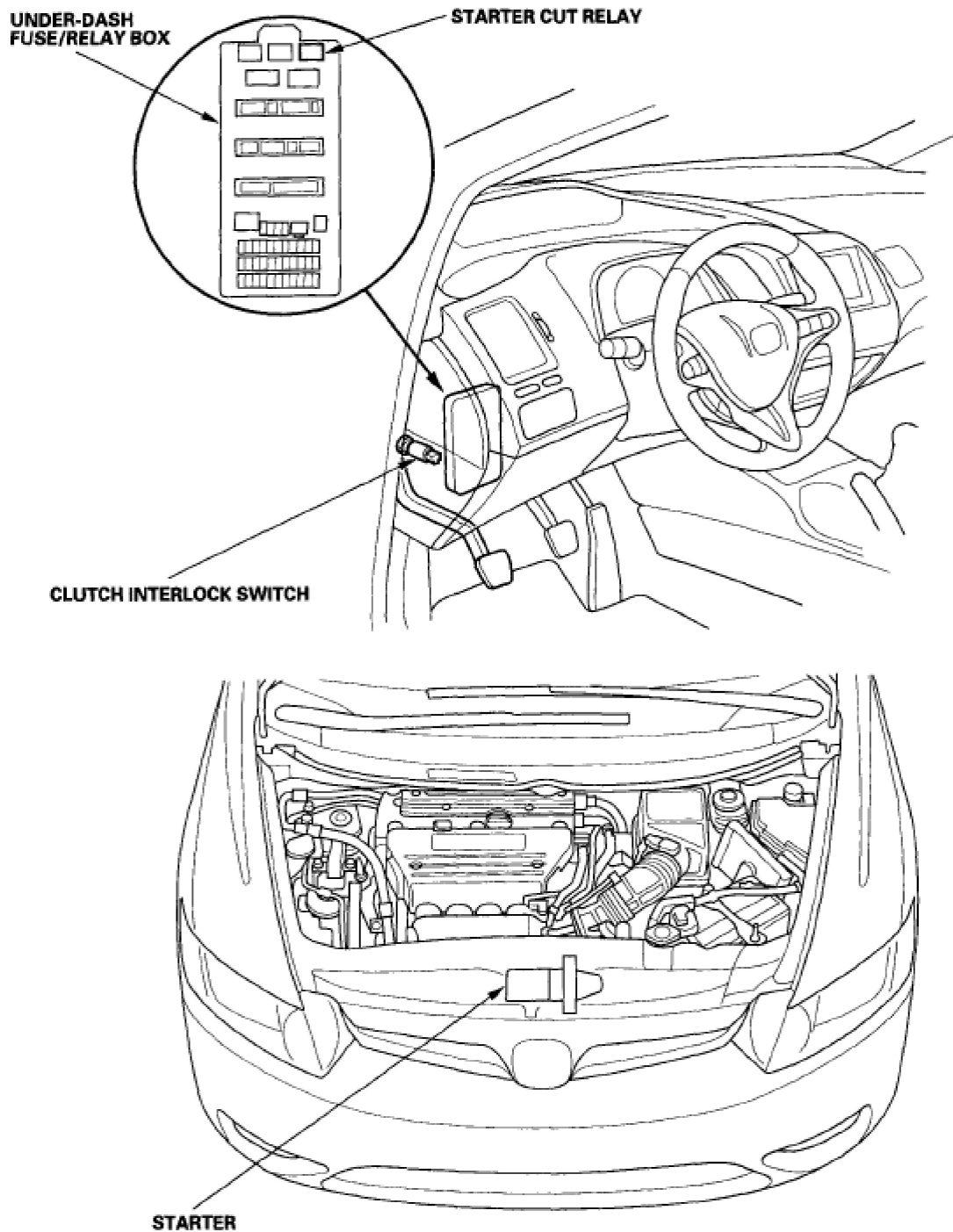


Fig. 1: Identifying Starting System (K20Z3) Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2008 Honda Civic GX

2006-08 ENGINE Starting System (K20Z3) - Civic (All Except Si)

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure	Also check for
Engine does not start (does not crank)	1. Check for loose battery terminals or connections. 2. Test the battery for a low charge (see <u>BATTERY TEST</u>). 3. Check the starter (see <u>STARTER CIRCUIT TROUBLESHOOTING</u>). 4. Check the starter cut relay (see <u>POWER RELAY TEST</u>). 5. Check the clutch interlock switch (see <u>CLUTCH INTERLOCK SWITCH TEST</u>). 6. Check the ignition switch or wire (see <u>TEST</u>).	Poor ground at G401
Engine cranks, but does not start	1. Check for PGM-FI DTCs (see <u>GENERAL TROUBLESHOOTING INFORMATION</u>). 2. Check the fuel pressure (see <u>FUEL PRESSURE TEST</u>). 3. Check for a plugged or damaged fuel line (see <u>FUEL LINE INSPECTION</u>). 4. Check for a plugged fuel filter (see <u>FUEL PRESSURE REGULATOR REPLACEMENT</u>). 5. Check the throttle body (see <u>THROTTLE BODY REMOVAL/INSTALLATION</u>). 6. Check for low engine compression (see <u>ENGINE COMPRESSION INSPECTION</u>). 7. Check for a damage or broken cam chain.	
	1. Check for PGM-FI DTCs (see <u>GENERAL TROUBLESHOOTING INFORMATION</u>). 2. Check the fuel pressure (see <u>FUEL PRESSURE TEST</u>).	

2008 Honda Civic GX
2006-08 ENGINE Starting System (K20Z3) - Civic (All Except Si)

Engine is hard to start	3. Check for a plugged or damaged fuel line (see <u>FUEL LINE INSPECTION</u>). 4. Check for a plugged fuel filter (see <u>FUEL PRESSURE REGULATOR REPLACEMENT</u>). 5. Check for a restricted three way catalytic converter (TWC) or exhaust system	
Engine cranks slowly	1. Check for loose battery terminals or connections. 2. Test the battery for a low charge (see <u>BATTERY TEST</u>). 3. Check the starter for binding (see <u>STARTER OVERHAUL</u>). 4. Check for excessive drag in the engine.	

CIRCUIT DIAGRAM

2008 Honda Civic GX

2006-08 ENGINE Starting System (K20Z3) - Civic (All Except Si)

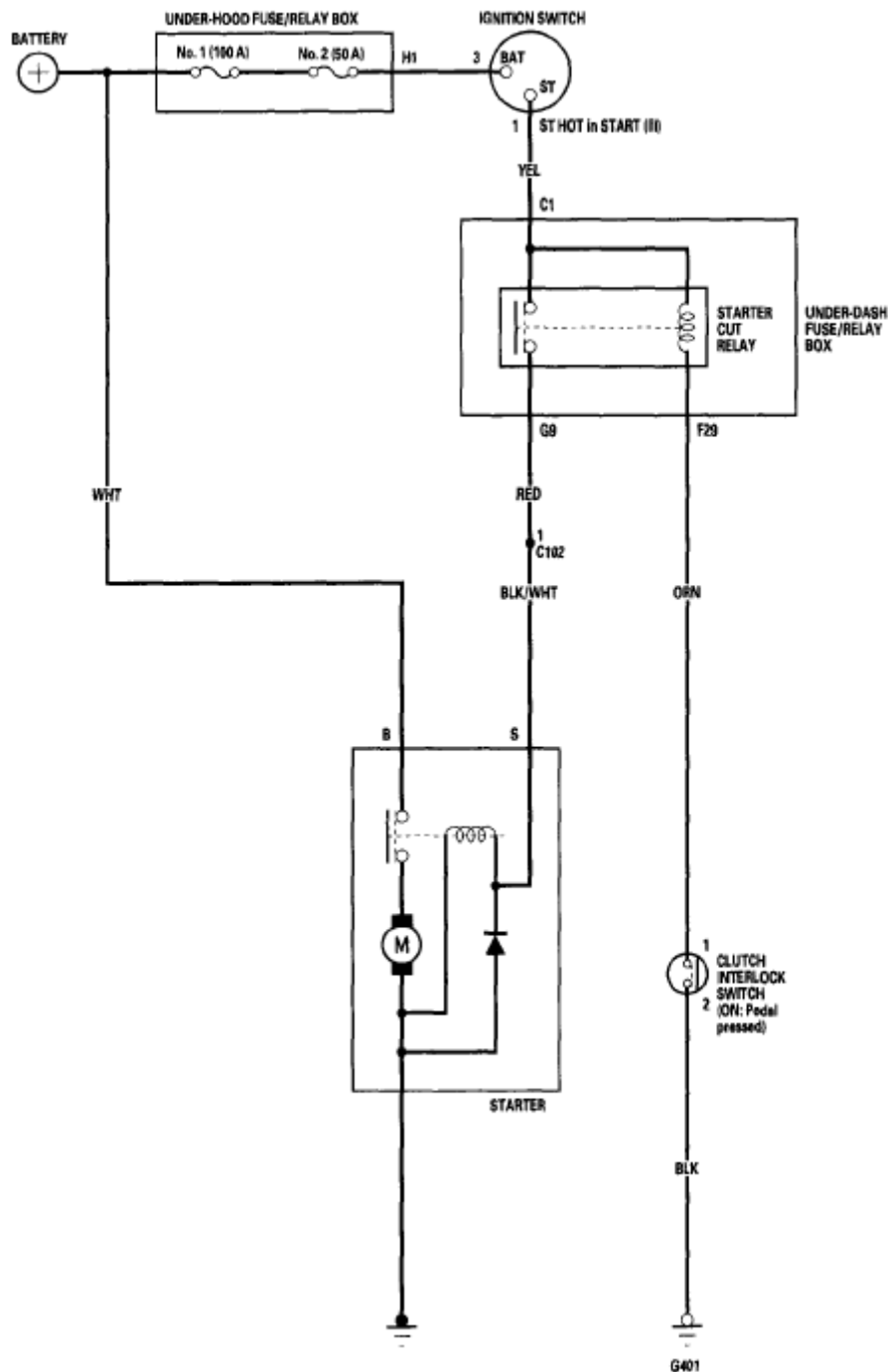


Fig. 2: Starting System - Circuit Diagram

Courtesy of AMERICAN HONDA MOTOR CO., INC.

STARTER CIRCUIT TROUBLESHOOTING

NOTE: • Air temperature must be between 59-100°F (15-38°C)

during this procedure.

- After this inspection, you must reset the engine control module (ECM), otherwise the ECM will continue to stop the fuel injectors from functioning.
- The battery must be in good condition and fully charged.

1. Hook up the following equipment:

- Ammeter, 0-400 A
- Voltmeter, 0-20 V (accurate within 0.1 V)

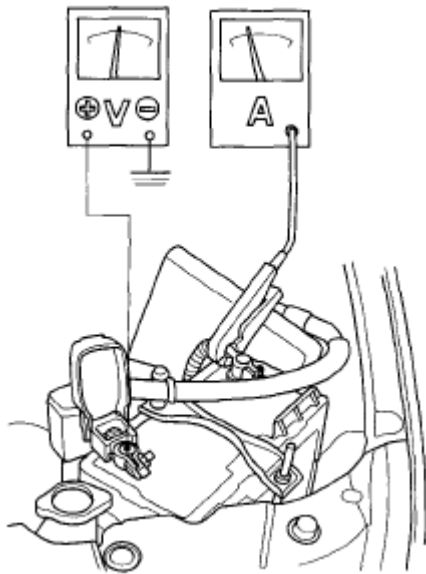


Fig. 3: Hooking Up Ammeter & Voltmeter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Connect the HDS to the data link connector (DLC) (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
3. Turn the ignition switch ON (II).
4. Make sure the HDS communicates with the vehicle and the ECM. If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
5. Select PGM-FI, INSPECTION, then ALL INJECTORS OFF on the HDS.
6. Set the parking brake, then with the clutch pedal pressed, turn the ignition

switch to START (III).

Does the starter crank the engine normally?

YES -The starting system is OK. Go to step 12.

NO -Go to step 7.

7. Check the battery condition (see **BATTERY TEST**). Check the electrical connections at the battery, the negative battery cable to the body, the engine ground cables, and the starter for looseness and corrosion. Then try cranking the engine again.

Does the starter crank the engine?

YES -Repairing the loose connection corrected the problem. The starting system is OK. Go to step 12.

NO -Check the following:

- If the starter will not crank the engine at all, go to step 8.
 - If starter cranks the engine erratically or too slowly, go to step 10.
 - If starter does not disengage from the flywheel ring gear when you release the key, replace the starter, or remove and disassemble it and check for the following:
 - Solenoid plunger and switch malfunction
 - Dirty drive gear or damaged overrunning clutch
8. Make sure the transmission is in neutral, and set the parking brake. Disconnect the starter subharness 1P connector (A) from the main wire harness 1P connector (B). Connect a jumper wire from the battery positive terminal to the starter subharness IP connector.

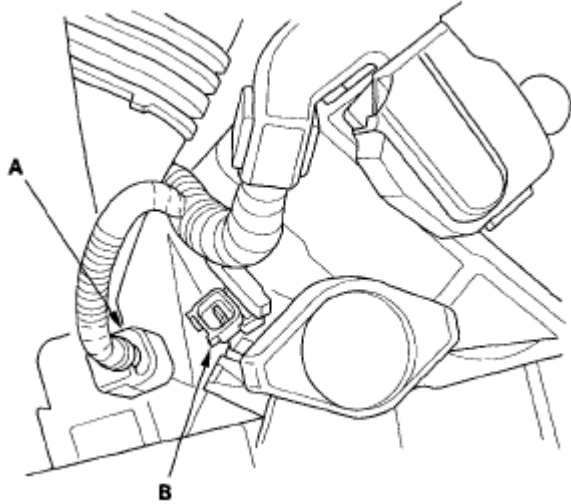


Fig. 4: Identifying Connector

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Does the starter crank the engine?

YES -Go to step 9.

NO -Check the BLK/WHT wire between the starter subharness 1P connector and the starter. If the wire is OK, remove the starter, and repair or replace as necessary.

9. Check the following items in the order listed until you find the open circuit:
 - The YEL wire and connectors between the under-dash fuse/relay box and the ignition switch.
 - The RED wire and connectors between the under-dash fuse/relay box and the main wire harness 1P connector.
 - The ignition switch (see **TEST**).
 - The clutch interlock switch and connector.
 - The starter cut relay (see **POWER RELAY TEST**).
10. While cranking the engine, check the cranking voltage and the current draw.

Is the cranking voltage greater than or equal to 8.5 V and is the current draw less than or equal to 380 A?

YES -Go to step 11.

NO -Replace the starter, or remove and disassemble it, and check the following:

- Drag in the starter armature
- Shorted armature winding
- Excessive drag in the engine
- Open circuit in the starter armature commutator segments
- Excessively worn starter brushes
- Open circuit in the starter brushes
- Dirty or damaged helical splines or drive gear
- Faulty drive gear clutch

11. Remove the starter, and inspect its drive gear and the flywheel ring gear for damage. Replace any damaged parts.
12. Select ECM reset (see **HDS CLEAR COMMAND**) to cancel ALL INJECTORS OFF on the HDS.

CLUTCH INTERLOCK SWITCH TEST

1. Disconnect the clutch interlock switch 2P connector (A).

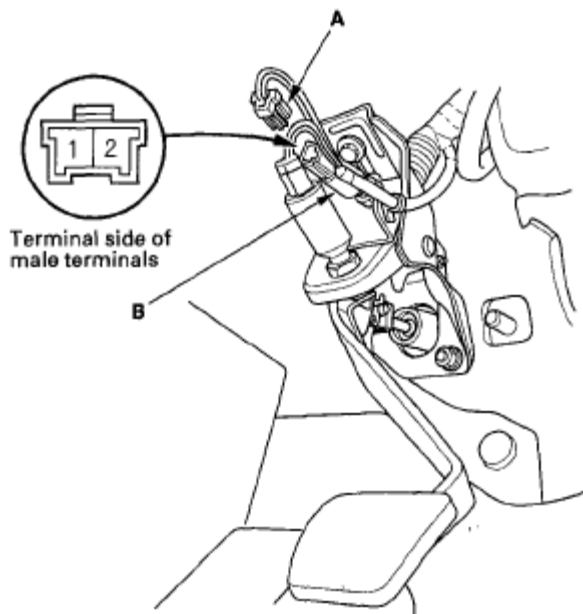


Fig. 5: Identifying Clutch Interlock Switch 2P Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the clutch interlock switch (B).
3. Check for continuity between the terminals according to the table.
 - If the continuity is not as specified, replace the clutch interlock switch.
 - If OK, install the clutch interlock switch, and adjust the pedal height (see **CLUTCH PEDAL, CLUTCH PEDAL POSITION SWITCH, AND CLUTCH INTERLOCK SWITCH ADJUSTMENT**).

Terminal	1	2
Clutch Interlock Switch		
PRESSED	○ — ○	
RELEASED		

Fig. 6: Terminals Continuity Table
Courtesy of AMERICAN HONDA MOTOR CO., INC.

STARTER PERFORMANCE TEST

1. Make a connection for this test using the thickest (gauge) wire possible (preferably the same gauge as used on the vehicle).

NOTE: To avoid damaging the starter, never leave the battery connected for more than 10 seconds.

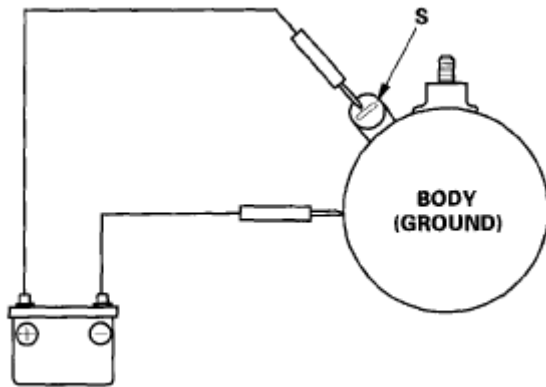


Fig. 7: Identifying Starter Connections

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Connect the battery as shown. If the starter pinion moves out, it is working properly.
3. Disconnect the battery from the body. If the pinion retracts immediately, it is working properly.

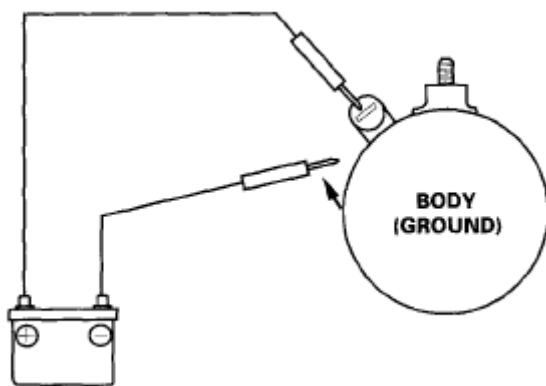


Fig. 8: Disconnecting Battery From Body

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Firmly clamp the starter in a vise.
5. Connect the starter to the battery as shown, and check that the motor turns and keeps rotating.

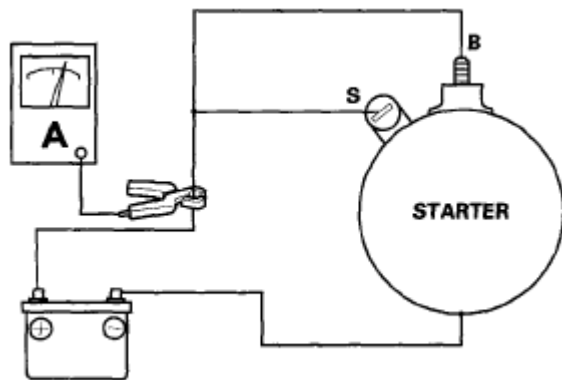


Fig. 9: Connecting Starter To Battery

Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the electric current meets the specification when the battery voltage is at 11.5 V, the starter is working properly.

Specification

Electric Current: 80 A or less

STARTER REMOVAL AND INSTALLATION

REMOVAL

1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Remove the splash shield.

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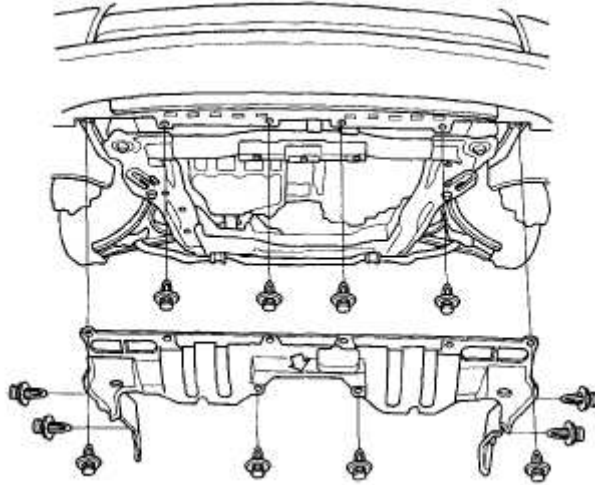


Fig. 10: Identifying Splash Shield And Clips
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the intake manifold bracket.

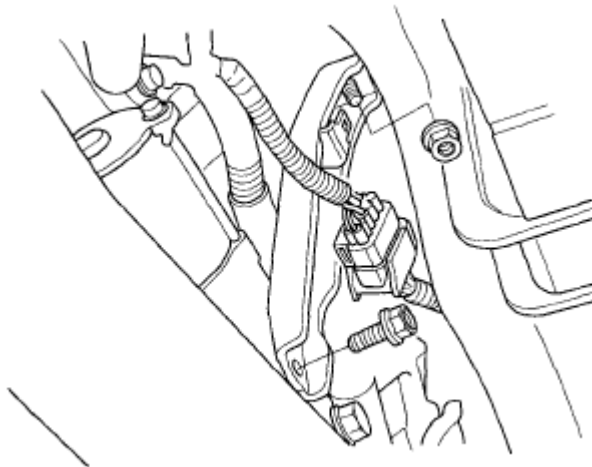


Fig. 11: Identifying Intake Manifold Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the harness clamp (A), and remove the two bolts (B) securing the starter, then remove the starter from the engine.

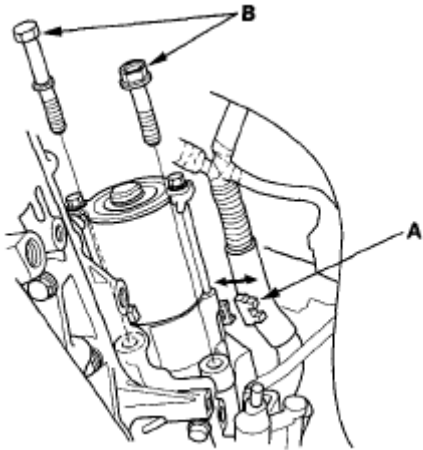


Fig. 12: Identifying Starter Bolts

Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Disconnect the starter cable (A) from the B terminal, then disconnect the BLK/WHT wire (B) from the S terminal.

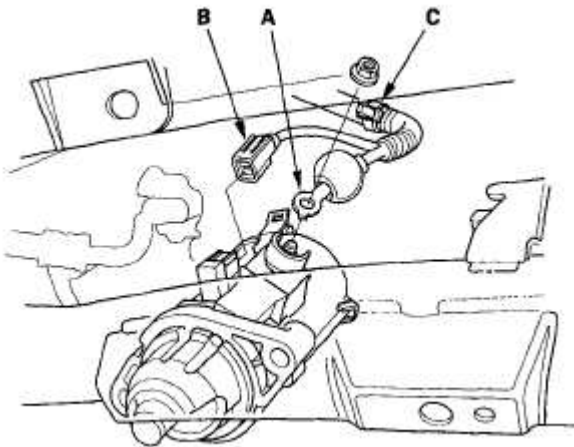


Fig. 13: Identifying BLK/WHT Wire

Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the harness clamp (C), then remove the starter.

INSTALLATION

1. Install the starter cable (A) and BLK/WHT (B) wire. Make sure the starter cable crimped side of the ring terminal faces away from the starter when you connect it.

2008 Honda Civic GX

2006-08 ENGINE Starting System (K20Z3) - Civic (All Except Si)

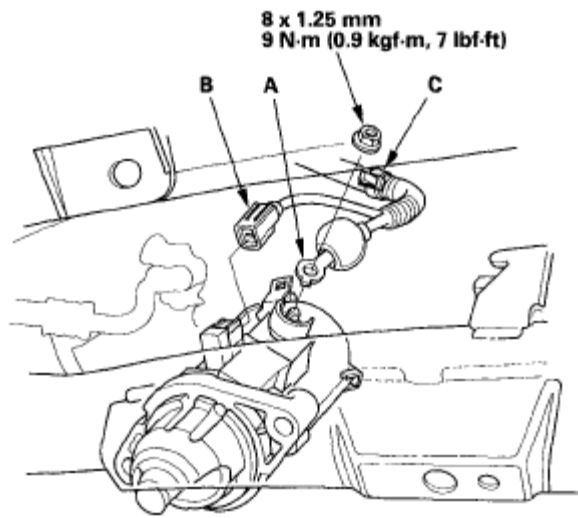


Fig. 14: Identifying Starter Cable And BLK/WHT Wire (With Torque Specifications)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the harness clamp (C).
3. Install the starter, and tighten the bolts then install the harness clamp (A).

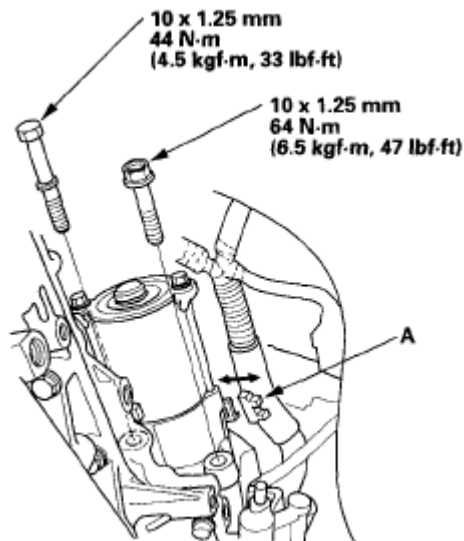


Fig. 15: Identifying Starter Bolts (With Torque Specifications)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the intake manifold bracket.

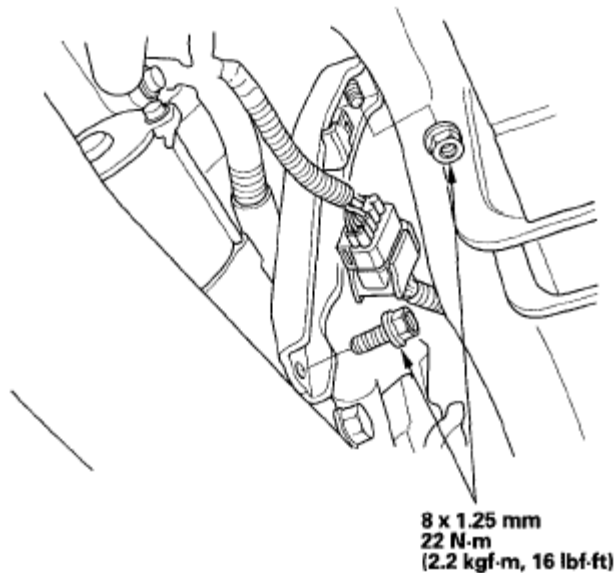


Fig. 16: Identifying Intake Manifold Bracket (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the splash shield.

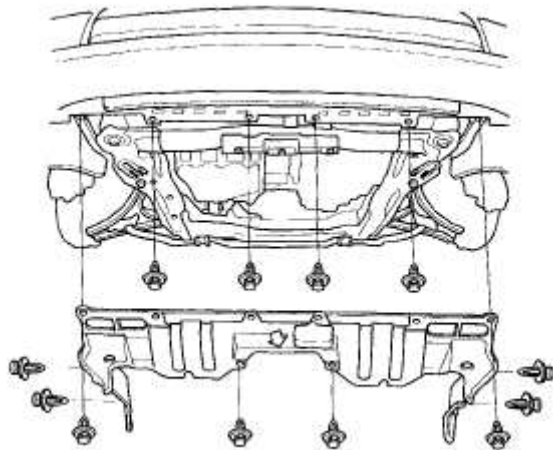


Fig. 17: Identifying Splash Shield And Clips
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Connect the positive cable to the battery first, then connect the negative cable.
7. Start the engine to make sure the starter works properly.
8. Enter the anti-theft code for the audio system and the navigation system (if equipped), then enter the audio presets.

9. Set the clock.

STARTER OVERHAUL

DISASSEMBLY/REASSEMBLY

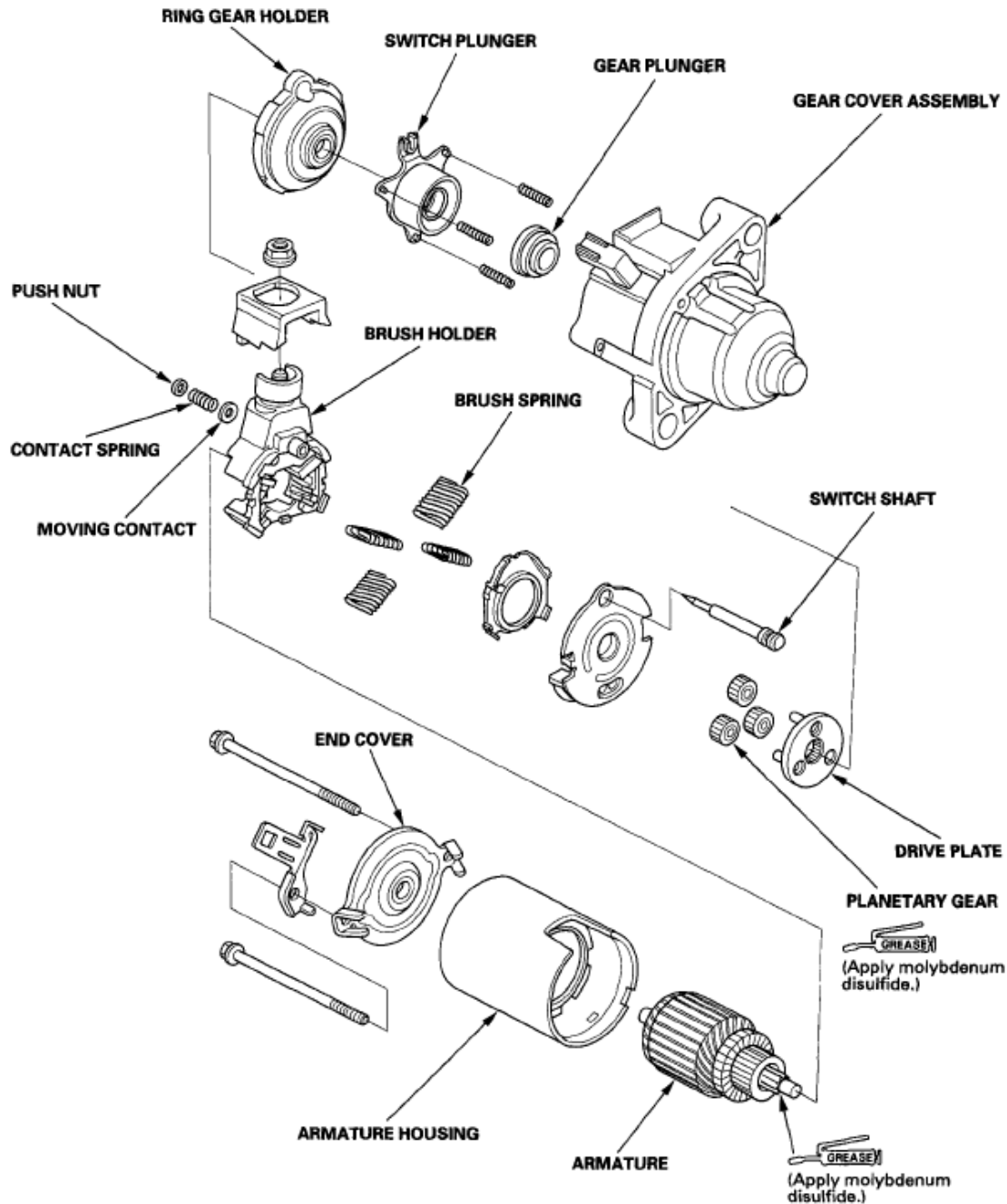


Fig. 18: Exploded View Of Starter Overhaul
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Armature Inspection and Test

1. Remove the starter (see **STARTER REMOVAL AND INSTALLATION**).
2. Disassemble the starter as shown at the beginning of this procedure.
3. Inspect the armature for wear or damage from contact with the permanent magnet. If there is wear or damage, replace the armature.

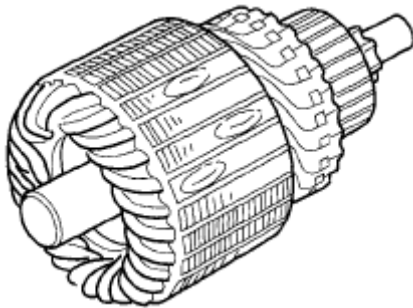


Fig. 19: Identifying Armature

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Check the commutator (A) surface. If the surface is dirty or burnt, resurface it with an emery cloth or a lathe to the following specifications, or recondition with #500 or #600 sandpaper (B).

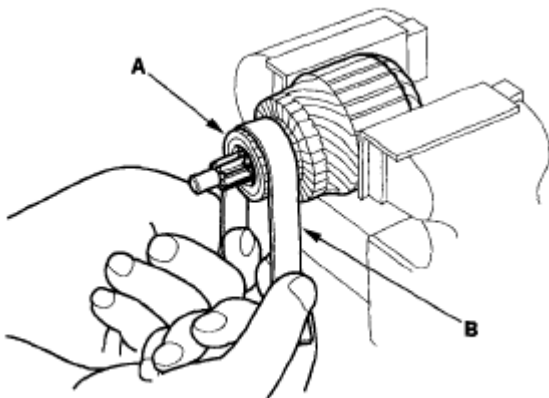


Fig. 20: Checking Commutator Surface

Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Check the commutator diameter. If the diameter is below the service limit, replace the armature.

Commutator Diameter

Standard (New): 28.0-28.1 mm (1.102-1.106 in.)

Service Limit: 27.5 mm (1.083 in.)

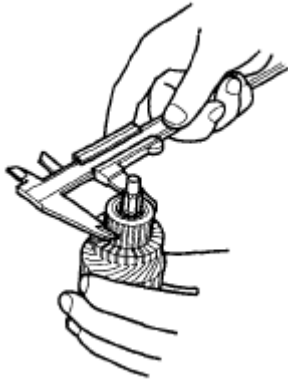


Fig. 21: Checking Commutator Diameter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Measure the commutator (A) runout.
 - If the commutator runout is within the service limit, check the commutator for carbon dust or brass chips between the segments.
 - If the commutator runout is not within the service limit, replace the armature.

Commutator Runout

Standard (New): 0.02 mm (0.001 in.) max.

Service Limit: 0.05 mm (0.002 in.)

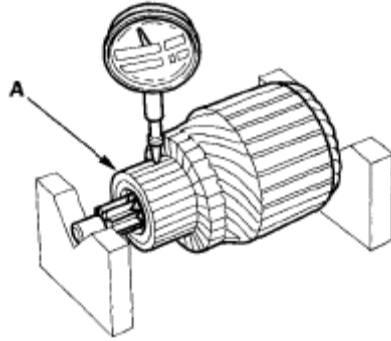


Fig. 22: Measuring Commutator Runout
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Check the mica depth (A). If the mica is too high (B), undercut the mica with a hacksaw blade to the proper depth. Cut away all the mica (C) between the commutator segments. The undercut should not be too shallow, too narrow, or V-shaped (D).

Commutator Mica Depth

Standard (New): 0.40-0.50 mm (0.016-0.020 in.)

Service Limit: 0.15 mm (0.006 in.)

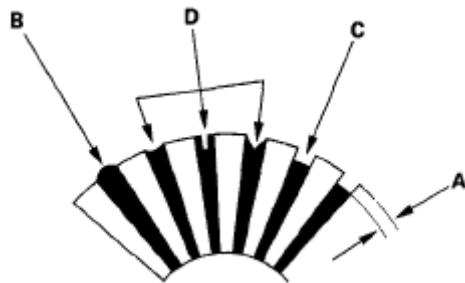


Fig. 23: Identifying Commutator Mica Depth
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Check for continuity between the segments of the commutator. If there is open circuit between any of the segments, replace the armature.

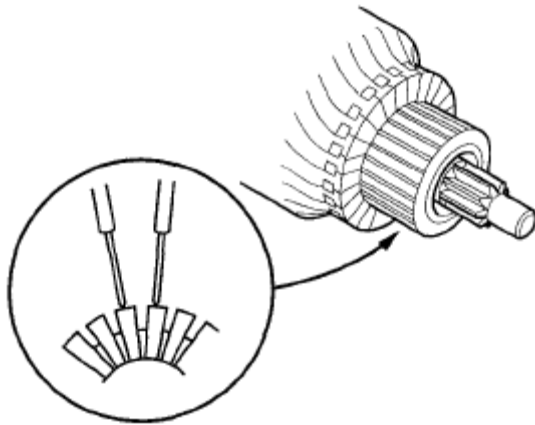


Fig. 24: Identifying Commutator Segments

Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Place the armature (A) on an armature tester (B). Hold a hacksaw blade (C) on the armature core. If the blade is attracted to the core or vibrates while the core is turned, the armature is shorted. Replace the armature.

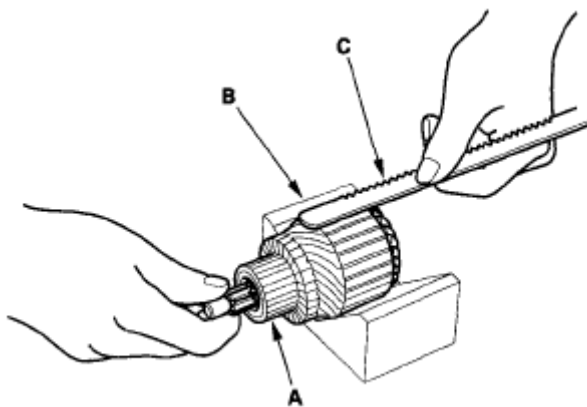


Fig. 25: Placing Armature On Armature Tester Hold Hacksaw Blade On Armature Core

Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Check for continuity between the commutator (A) and the armature coil core (B), and between the commutator and the armature shaft (C). If there is continuity, replace the armature.

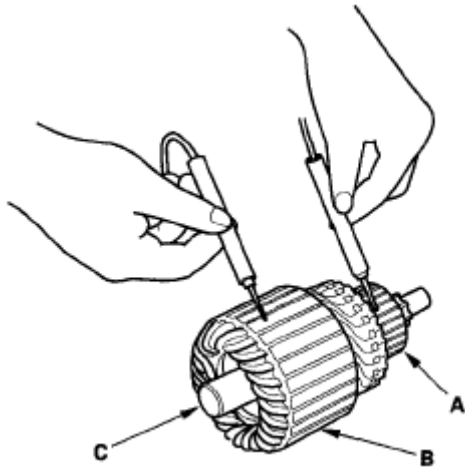


Fig. 26: Checking Continuity Between Commutator And Armature Coil Core

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Starter Brush Inspection

11. Measure the brush length. If it is shorter than the service limit, replace the brush holder assembly.

Brush Length

Standard (New): 11.1-11.5 mm (0.44-0.45 in.)

Service Limit: 4.3 mm (0.17 in.)

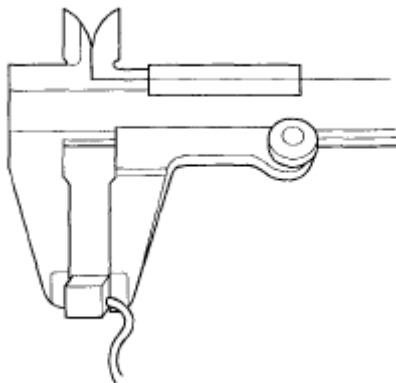


Fig. 27: Measuring Brush Length

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Starter Brush Holder Test

12. Check for continuity between the (+) brush (A) and (-) brush (B). If there is continuity, replace the brush holder assembly.

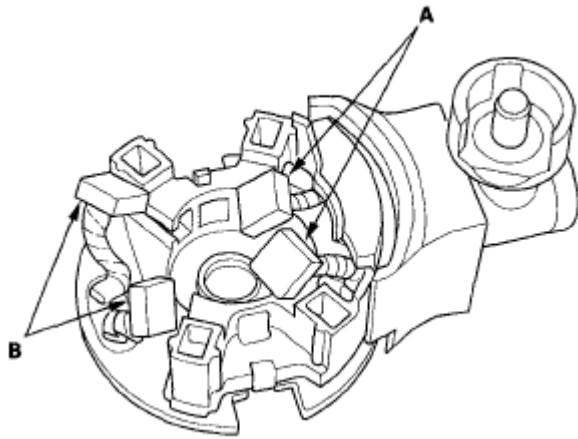


Fig. 28: Identifying Starter Brush Holder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Planetary Gear Inspection

13. Check the planetary gears (A) and ring gear (B). Replace them if they are worn or damaged.

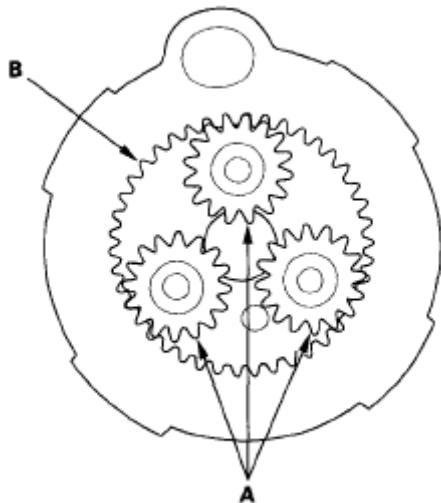


Fig. 29: Identifying Planetary Gears And Ring Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Overrunning Clutch Inspection

14. While holding the drive gear (A), turn the gear shaft (B) counterclockwise. Check that the drive gear comes out to the other end. If the drive gear does not move smoothly, replace the gear cover assembly.

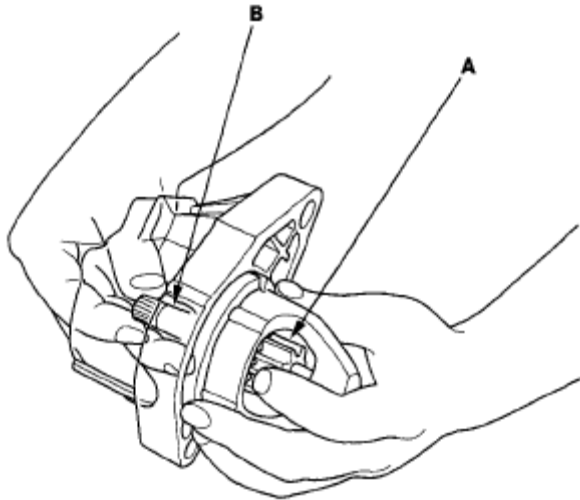


Fig. 30: Turning Gear Shaft

Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. While holding the drive gear, turn the gear shaft clockwise. The gear shaft should turn freely. If the gear shaft does not turn freely, replace the gear cover assembly.
16. If the starter drive gear is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately.

Check the condition of the flywheel ring gear to see if the starter drive gear teeth are damaged.

Starter Reassembly

17. Install the brush into the brush holder, and set the armature (A) in the brush holder (B).

NOTE: To seat the new brushes, slip a strip of # 500 or # 600 sandpaper, with the grit side up, between the

commutator and each brush, and smoothly turn the armature. The contact surface of the brushes will be sanded to the same contour as the commutator.

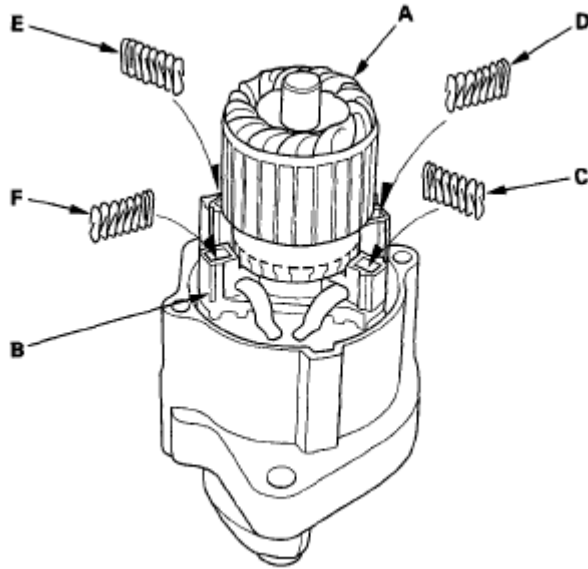


Fig. 31: Identifying Brush Springs
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. While squeezing a spring (C), insert it in the hole on the brush holder, and push it until it bottoms. Repeat this for the other three springs (D, E, and F).
19. Install the armature and brush holder assembly into the housing.

NOTE: Make sure the armature stays in the holder.